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1 EC Declaration of Conformity

Revision of Declaration of Conformity 2009-12-29

The Designated Company

Alfa Laval Kolding A/S Company Name

Albuen 31, DK-6000 Kolding, Denmark

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hereby declare that

Sanitary Mixproof Valve

SMP-BC PN10

Туре

is in conformity with the following directive with amendments:

- Machinery Directive 2006/42/EC

- Pressure Equipment Directive 2014/68/EU category 1 and subjected to assessment procedure Module A.

The person authorised to compile the technical file is the signer of this document

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 Pumps, Valves, Fittings and Tank Equipment
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 Title
 Name

Kolding Place 2016-06-15 Date

Signature

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Unsafe practices and other important information are emphasized in this manual. Warnings are emphasized by means of special signs. All warnings in the manual are summarized on this page. Pay special attention to the instructions below so that severe personal injury and/or damage to the valve are avoided.

2.1 Important information

Always read the manual before using the valve!

WARNING

Indicates that special procedures must be followed to avoid serious personal injury.

CAUTION

Indicates that special procedures must be followed to avoid damage to the valve.

NOTE

Indicates important information to simplify or clarify procedures.

2.2 Warning signs

General warning:







Cutting danger:



2 Safety

Unsafe practices and other important information are emphasized in this manual. Warnings are emphasized by means of special signs. All warnings in the manual are summarized on this page. Pay special attention to the instructions below so that severe personal injury and/or damage to the valve are avoided.

2.3 Safety precautions

Installation:



Operation:

Always read the technical data thoroughly (see chapter 6.1 Technical data). Always release compressed air after use. Never touch the clip assembly or the actuator piston rod when the actuator is supplied with compressed air. Never touch the valve or the pipelines when processing hot liquids or when sterilizing. Always handle lye and acid with great care. Always keep the cleaning pressure lower than the product pressure.

Never throttle the outlet of the detecting valve.

Maintenance:

Always read the technical data thoroughly (see chapter 6.1 Technical data). Always release compressed air after use. Always remove the CIP connections before service.

Never service the valve when it is hot. Never service the valve with valve and pipelines under pressure.

Never stick your fingers through the valve ports if the actuator is supplied with compressed air.

Never touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.



Transportation:

Always ensure that compressed air are released.

Always ensure that all connections is disconnected before attempting to remove the valve from the installation.

Always drain liquid out of valves before transportation.

Always used predesigned lifting points if defined.

Always ensure sufficient fixing of the valve during transportation - if specially designed packaging material is available, it must be used.

ta a

The instruction manual is part of the delivery. Study the instructions carefully. Stop valve: With one valve body. Change-over valve: With three valve bodies. CIP = Cleaning In Place (see 4.3 Recommended cleaning).

Unpacking/delivery 3.1

Step 1

CAUTION!

Alfa Laval cannot be held responsible for incorrect unpacking.

Check the delivery for:

- 1. Complete valve, standard or three-bodied valve.
- 2. Delivery note.
- 3. Instruction manual.

Step 2

Step 3

Remove possible packing materials from the valve ports. Avoid damaging the air connection and the valve ports, the detecting valve and the CIP valve.



3 Installation

Study the instructions carefully and pay special attention to the warnings! The valve has welding ends as standard but can also be supplied with fittings. CIP = Cleaning In Place (see section 4.3 Recommended cleaning).

3.2 Recycling information

Unpacking

- Packing material consists of wood, plastics, cardboard boxes and in some cases metal straps.
- Wood and cardboard boxes can be re-used, recycled or used for energy recovery.
- Plastics should be recycled or burnt at a licensed waste incineration plant.
- Metal straps should be sent for material recycling.

Maintenance

- During maintenance, oil and wearing parts in the machine are replaced.
- All metal parts should be sent for material recycling.
- Worn out or defective electronic parts should be sent to a licensed handler for material recycling.
- Oil and all non-metal wear parts must be disposed off in agreement with local regulations.

Scrapping

- At end of use, the equipment must be recycled according to the relevant, local regulations. Besides the equipment itself, any hazardous residues from the process liquid must be considered and dealt with in a proper manner. When in doubt, or in the absence of local regulations, please contact your local Alfa Laval sales company.

3.3 General installation

Step 1

- Always read the technical data thoroughly (see 6.1 Technical data).
- Always release compressed air after use.
- Never touch the clip assembly or the actuator piston rod if the actuator is supplied with compressed air.

CAUTION!

Alfa Laval cannot be held responsible for incorrect installation.

Step 2

Install the valve so that:

- The actuator is turned to the uppermost point.
- The detecting valve is self-draining.
- The flow is against the closing direction to avoid water hammer.



Change-over valve

Avoid water hammer!

Stop valve

Study the instructions carefully and pay special attention to the warnings! The valve has welding ends as standard but can also be supplied with fittings. CIP = Cleaning In Place (see section 4.3 Recommended cleaning).

Step 3

Avoid stressing the valve. Pay special attention to:

- Vibrations.
- Thermal expansion of the tubes.
- Excessive welding
- Overloading of the pipelines



Step 4 Fittings: Ensure that the connections are tight.



Step 5

Drain connection:

The drain hose on the bonnet should always be connected to a tube so that no personal injury can occur in case of a leakage.



3 Installation

Study the instructions carefully and pay special attention to the warnings! The valve has welding ends as standard but can also be supplied with fittings. CIP = Cleaning In Place (see section 4.3 Recommended cleaning).

Step 6

CIP/Steam connection:

- 1. See the description of cleaning and optional extras in section 4.3 Recommended cleaning.
- 2. Connect CIP correctly.
- 3. Internal steam pressure must not exceed 120°C/200 kPa (2 bar).
- A = CIP/Steam in
- B = R3/8" (BSP), external thread
- C = CIP/Steam out or leakage drain



Study the instructions carefully and pay special attention to the warnings! The valve has welding ends as standard. Weld carefully. Check the valve for smooth operation after welding.

3.4 Welding

Step 1



Never stick your fingers through the valve ports if the actuator is supplied with compressed air.



Step 2

Dismantle the valve in accordance with Step 1- Step 3 in section 5.2 Dismantling of valve . Pay special attention to the warnings!

Step 3 NOTE!

Always weld the valve body into the pipelines so that the valve body seal rings can be replaced (change-over valve). Maintain the minimum clearances (A and B) so that the lower valve plug (change-over valve) and the actuator with the internal parts can be removed.

Valve size	А	B1	B2 (incl. top unit)	
		mm/inch		
DN40/38 mm	280/11	580/22.8	760/30	
DN50/51 mm	305/12	580/22.8	760/30	
DN65/63.5 mm	360/14	580/22.8	760/30	
DN80/76 mm	410/16	630/24.8	810/31.9	
DN100/101.6 mm	470/19	630/24.8	860/33.9	



Step 4

Assemble the valve in accordance with Step 4 - Step 9 in section 5.3 Assembly of valve. **Pay special attention to the warnings!**

3 Installation

Study the instructions carefully and pay special attention to the warnings! The valve has welding ends as standard. Weld carefully. Check the valve for smooth operation after welding.

Step 5

Pre-use check:

- 1. Supply compressed air to the actuator.
- 2. Open and close the valve a few times to ensure that it operates smoothly.

Pay special attention to the warnings!

If actuator is supported by air on spring side; max allowable pressure is 300 kPa (3 bar)



The valve is adjusted and tested before delivery.

Study the instructions carefully and pay special attention to the warnings! Pay attention to possible faults. The items refer to the drawings and parts - see section 7 Parts list and service kits CIP = Cleaning In Place (see section 4.3 Recommended cleaning).

4.1 Operation

Step 1

- Always read the technical data thoroughly (see 6.1 Technical data).
- Always release compressed air after use.
- Never touch the clip assembly or the actuator piston rod when the actuator is supplied with compressed air.

Step 2

Never touch the valve or the pipelines when processing hot liquids or when sterilizing.

CAUTION!

Alfa Laval cannot be held responsible for incorrect operation.



4.2 Fault finding

NOTE!

Study the maintenance instructions carefully before replacing worn parts. - See section 5.1 General maintenance

Problem	Cause/result	Possible solution
Product leakage through the detecting valve (closed valve)	 Worn seal rings The two seal rings affected by different products Incorrect fitting of seal rings Product deposits on the seat and/or plug 	 Replace the seal rings Select a different rubber grade Frequent cleaning
Product leakage through the detecting valve (open valve)	 Worn O-ring (26a) Worn spindle (26d) Product deposits on the seat and/or plug 	 Replace the O-ring Replace the spindle Frequent cleaning
Product leakage at drain tube and/or clamp	Worn/product affected diaphragm set (22) and/or seal rings (17)	 Replace the seal rings or diaphragm set Select a different rubber grade
Product leakage through middle or lower valve body (closed lower plug)	 Worn/product affected plug seal ring Loose parts (vibrations) Product deposits on the seat and/ or plug 	 Replace the seal ring Select a different rubber grade Tighten the loose parts Frequent cleaning
Air leakage through the CIP and detecting valveAir leakage at the actuator	Worn seal rings	Replace the seal rings

4 Operation

The valve is designed for cleaning in place (CIP). CIP = Cleaning In Place. Study the instructions carefully and pay special attention to the warnings! NaOH = Caustic Soda. HNO3 = Nitric acid.

4.3 Recommended cleaning



The valve is designed for cleaning in place (CIP). CIP = Cleaning In Place. Study the instructions carefully and pay special attention to the warnings! NaOH = Caustic Soda. HNO3 = Nitric acid.

Step 5

Recommended cleaning periods:

Cleaning periods of 10-15 seconds for the leakage chamber.

Product	Periods
Milk	1-2
Yoghurt	3-5
Beer	2-5
Cold wort	5-10

Recommended cleaning flow rates:

(For special processes, see Step 6). Leakage chamber: 12-15 l/min (3.2 - 4.0 gpm).

Step 6

- Avoid excessive concentration of the cleaning agent ⇒ Dose gradually!
- 2. Adjust the cleaning flow to the process Milk sterilization/viscous liquids ⇒ Increase the cleaning flow!

Step 7

Always rinse well with clean water after the cleaning. NOTE! The cleaning agents must be stored/disposed of in accordance

with current rules/directives.



Step 8 Cleaning cycle: Pay special attention to the warnings!

Step 9

Closed Stop valve: Cleaning of sterile barrier chamber

- A = Product
- B = CIP/steam in
- C = CIP/steam out



4 Operation

The installations kits are for cleaning/sterilizing of the leakage chamber when the valve is closed. The stainless steel tubes must be cut and welded during installation. CIP = Cleaning In Place.

Step 10

Open Stop valve: Cleaning of the valve body and the leakage chamber

A = CIP

Step 11 Change-over valve: Cleaning of the upper valve body

A = CIP B = Product



A

4.4 Cleaning and sterilization equipment (optional extra)

Step 1

Installation kit C for CIP/steam and leakage connection of a single valve (stainless steel tubes).

Contents:

Pos. 1 Welding male part Pos. 4 CIP leakage tube AISI 316

* Adjust and weld during installation.



Step 2

To ensure aseptic processing and mixproof function certain rules must be followed:

- After the valve is closed the leakage chamber must be cleaned and sterilized.
- The leakage chamber must be kept sterile until the valve is opened again.

Maintain the valve regularly. Study the instructions carefully and pay special attention to the warnings! CIP = Cleaning In Place. Always keep spare rubber seals, lip seals and guide rings in stock.

5.1 General maintenance

Step 1

Always read the technical data thoroughly (see 6.1 Technical data).

- Always release compressed air after use.
- Always remove the CIP connections before service.

Step 2

- Never service the valve when it is hot.
- Never service the valve with valve and pipelines under pressure.

CAUTION!

All scrap must be stored/disposed of in accordance with current rules/directives.



Step 3



Never stick your fingers through the valve ports if the actuator is supplied with compressed air.





5 Maintenance

Maintain the valve regularly. Study the instructions carefully and pay special attention to the warnings! CIP = Cleaning In Place. Always keep spare rubber seals, lip seals and guide rings in stock.

The valve is designed so that single internal leakages do not resolve in the products becoming mixed. Internal leakage in the valve is externally visible. Check the valve for smooth operation after service.

Ordering spare parts

- Contact the Sales Department.
- Order from the Spare Parts List.

Recommended spare parts: Service kits (see Spare Parts List - see section 7 Parts list and service kits).

	Valve diaphragm unit	Valve rubber seals	Actuator rubber seals	Bonnet guide ring and O-rings
Preventive maintenance	Replace after 12 months (depending on working conditions)	Replace when replacing the diaphragms	Replace after 5 years	Replace when replacing the actuator rubber seals (*)
Maintenance after leakage (leakage normally starts slowly)	Replace by the end of the day	Replace when replacing the diaphragms	Replace when possible	Replace when replacing the actuator rubber seals (*)
Planned maintenance	 Regular inspection for leakage and smooth operation Keep a record of the valve Use the statistics for planning of inspections Replace after leakage 	Replace when replacing the diaphragms	 Regular inspection for leakage and smooth operation Keep a record of the actuator Use the statistics for planning of inspections Replace after air leakage 	
Lubrication (USDAH1 approved oil/grease)	Before fitting Silicone oil or silicone grease	Before fitting Silicone oil or silicone grease	Before fitting Silicone oil or silicone grease	Lubricate O-rings before fitting. Silicone oil or silicone grease

(*) IMPORTANT!

Check that the guide ring is fitted if replacing the bonnet.

Pre-use check:

1. Ensure that the valve plug seals against the seat.

Pay special attention to the warnings!

- 2. Pressurise the sterile barrier chamber by means of water.
- 3. Check that the plug seals are tight (no water leakage through the valve ports).
- 4. Supply compressed air to the actuator
- Open and close the valve a few times to ensure that it operates smoothly.
 Pay special attention to the warnings!

Water: 3-4 bar



Inspection



 $1 = \ln 1$

2 = Out

Study the instructions carefully. The items refer to the drawings and the parts list in chapter 7 Parts list and service kits. Lubricate the rubber seals and the diaphragms before fitting them.

5.2 Dismantling of valve

Step 1

- 1. Loosen and remove lower clamp (19).
- 2. Take away lower valve body (31).
- 3. Pull out seal ring (17).



Step 2

- 1. Unscrew lower plug (30).
- 2. Pull off seal ring (30a) (see special instruction in section 5.6 Replacement of plug seals).
- 3. Loosen and remove upper clamp (19).
- 4. Take away middle valve body (27).
- 5. Pull off O-ring (28) and seal ring (17).



- 1. Loosen and remove lower diaphragm clamp(19).
- 2. Take away upper valve body (25).



5 Maintenance

Study the instructions carefully.

The items refer to the drawings and the parts list in chapter 7 Parts list and service kits. Lubricate the rubber seals and the diaphragms before fitting them.

Step 4

- 1. Remove clip assembly (9).
- 2. Remove upper plug with complete diaphragm/stem unit.
- 3. Remove washer (20) (stop valves only).
- 4. Loosen and remove upper diaphragm clamp (19).
- 5. Take away intermediate piece (18).
- 6. Remove seal ring (17) from the intermediate piece.



Step 5

- 1. In sequence, turn lower and upper stem (29,21) anticlockwise (for stop valve: only upper stem) to separate them from upper plug (24) (counterhold with a spanner).
- 2. Remove diaphragms (22a, 22b), L-seal (22c) and stem seal (22d) from the upper plug.
- Remove diaphragm ring (23) and seal ring (17) from upper valve plug (25) (only for valve sizes 76-101.6mm/ DN80-100).

Step 6

- 1. Remove air fitting (26g).
- 2. Unscrew CIP valve housing (26f).
- 3. Pull out CIP valve plug (26d).
- 4. Remove CIP valve spring (26b).



5.3 Assembly of valve



- 1. Fit CIP valve spring (26b) on CIP valve plug (26d).
- 2. Insert the CIP valve plug with spring in the CIP valve body.
- 3. Screw CIP valve housing (26f) onto the CIP valve body.
- 4. Screw air fitting (26g) into the CIP valve housing.



Step 2

Fit seal rings (24b, 24c) and seal ring (30a) on plugs (see special instructions in section 5.6 Replacement of plug seals).



Study the instructions carefully.

The items refer to the drawings and the parts list in chapter 7 Parts list and service kits. Lubricate the rubber seals and the diaphragms before fitting them.

Step 3

- 1. Fit stem seal (22d), L-seal (22c) and diaphragms (22a, 22b) on upper plug (24). (For L-seal: see Step 4 on page 21).
- 2. Fit diaphragm ring (23) between upper stem (21) and the upper plug (only for valve sizes 76-101.6 mm/ DN80-100)
- 3. In sequence, screw the upper and lower stem (29) clockwise (for stop valve: only upper stem onto upper plug). Counterhold with a spanner. (Use loctite on threads of stems).

Step 4 CAUTION!

Ensure that L-seal (22c) is fitted on diaphragm (22a) before placing the diaphragm unit in upper valve body (25).





Change-over valve

Stop valve



- 1. Slide seal ring (17) into upper valve body (25) (only valve sizes 76-101.6 mm/DN80-100).
- 2. Fit diaphragm/stem unit in the upper valve body.
- 3. Position intermediate piece (18) on the upper valve body.
- 4. Fit and tighten lower diaphragm clamp.
- 5. Position washer (20) on upper stem (stop valve only).



- 1. Slide seal ring (17) into middle valve body (27).
- 2. Position the middle valve body on upper valve body (25).
- 3. Fit and tighten upper clamp (19).



5 Maintenance

Study the instructions carefully.

The items refer to the drawings and the parts list in chapter 7 Parts list and service kits. Lubricate the rubber seals and the diaphragms before fitting them.

Step 7

- 1. Slide O-ring (28) onto lower plug (30).
- 2. Screw the lower plug onto lower stem (29). (Use loctite).
- 3. Slide seal ring (17) into lower valve body (31).
- 4. Position the lower valve body on middle valve body (27).
- 5. Fit and tighten lower clamp (19).



Change-over valve

Stop valve

Step 8

- 1. Slide seal ring (17) into intermediate piece.
- 2. Supply compressed air to the actuator.
- 3. Lift actuator onto mounted intermediate piece (18).
- 4. Reassemble clip assembly (9).
- 5. Release compressed air.
- 6. Fit and tighten upper diaphragm clamp (19).



- 1. Supply compressed air to the actuator.
- 2. Operate the valve a few times to ensure that it runs smoothly. Pay special attention to the warnings.



Study the instructions carefully. The items refer to the drawings and the parts list in chapter 7 Parts list and service kits. Handle scrap correctly.

5.4 **Dismantling of actuator**

Step 1

- 1. Rotate cylinder (4) to unhook lock wire (10).
- 2. Remove the lock wire.

Rotate with the service tool!



Step 2

- 1. Disconnect cylinder (4) from bonnet (11
- 2. Pull off O-rings (2,10) from the bonnet.



Step 3

- Pull out piston (8) and spring assembly (5).
 Pull off O-ring (7) from the piston.



- Remove guide ring (15) from bonnet (11).
 Remove O-rings (14,16) from guide ring (15).



Maintenance 5

Study the instructions carefully. The items refer to the drawings and the parts list in chapter 7 Parts list and service kits. Lubricate the rubber seals before fitting them.

Assembly of actuator 5.5

Step 1

- 1. Fit O-rings (14, 16) on guide ring (15)
- 2. Fit guide ring (15) in bonnet (11).





- 1. Fit O-ring (7) on the piston.
- 2. Push the piston and spring packet (5) into cylinder (4).



Step 4

- Slide O-rings (2,10) onto bonnet (11).
 Fit cylinder (4) on the bonnet.



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Rotate with the service tool!

a

- 1. Rehook lock wire (10) through the slot in cylinder (4) in the hole in bonnet (11).
- 2. Rotate the cylinder 360o (see illustration above).



Study the instructions carefully. The items refer to the parts list and service kits - see section 7 Parts list and service kits. Handle scrap correctly. Do **not** lubricate the rubber seals or the tool parts before fitting the seals.

Step 5

NOTE! Rotate cylinder (4) further 180° in relation to bonnet (11) so that the top and bottom air connections are fixed on the same side.



5.6 Replacement of plug seals

Step 1

Remove the old seal rings by cutting them through and pulling them out of the grooves.

CAUTION!

Do not damage the seal ring grooves.

Removing the seal rings



IMPORTANT!

Before reading step 2-4, please see section 6.4

5 Maintenance

Study the instructions carefully.

The items refer to the parts list and service kits - see section 7 Parts list and service kits. Handle scrap correctly.

Do not lubricate the rubber seals or the tool parts before fitting the seals.

Step 2

Fitting the seal rings (For stop and change-over valves).

Lower (small) seal ring.

- 1. Carefully grease the seal with Klüber Paralig GTE 703 (USDA H1) do NOT grease on back of seal!
- 2. Fit the small seal on the inner guide ring (6). Remember to mount the flat side of seal upwards as shown on figure.
- 3. Fit support part (7) for smaller seal.
- 4. Lubricate the ends (A) of the support part (7) and the outer guide ring (5) with Klüber Paralig GTE 703 (USDA H1) and assemble the tool.
- 5. In a hydraulic press, the outer guide ring (5) is pressed downwards so that the seal is fitted in the groove of the valve plug. IMPORTANT! The outer guide ring (5) must be closed guickly until metal contact with the support part (7). Normally, the inner guide ring (6) is moved upwards during closing; otherwise lift the pin (2) while fixture is still closed.
- 6. If the seal is not fitted correctly in the groove this can be fixed with a screwdriver.
- 7. Always remember to release air behind the seal after fitting.

Upper valve plug:

(Stop valve and change-over valve)



- D = **NOTE!** Flat side up!
- * = Only for 38-51 mm/DN40-50 upper change-over plug.

Study the instructions carefully. The items refer to the parts list and service kits - see section 7 Parts list and service kits. Handle scrap correctly. Do **not** lubricate the rubber seals or the tool parts before fitting the seals.

Step 3

Fitting the seal rings (For stop and change-over valves) Upper (large) seal ring:

- 1. Carefully grease the seal with Klüber Paraliq GTE 703 (USDA H1) Do NOT grease on back of seal!
- 2. Fit the large seal on the inner guide ring (3). Remember to mount the flat side of seal upwards as shown on figure.
- 3. Lubricate the ends (A) of the tool housing (4) and the outer guide ring (1) with Klüber Paraliq GTE 703 (USDA H1) and assemble the tool.
- 4. In a hydraulic press, the outer guide ring (1) is pressed downwards so that the seal is fitted in the groove of the valve plug. IMPORTANT! The outer guide ring (1) must be closed quickly until metal contact with the tool housing (4). Normally, the inner guide ring (3) is moved upwards during closing; otherwise lift the pin (2) while fixture is still closed.
- 5. If the seal is not fitted correctly in the groove this can be fixed with a screwdriver.
- 6. Always remember to release air behind the seal after fitting.

Upper valve plug:

(Stop valve and change-over valve)



Maintenance 5

Study the instructions carefully.

The items refer to the parts list and service kits - see section 7 Parts list and service kits. Handle scrap correctly.

Do not lubricate the rubber seals or the tool parts before fitting the seals.

Step 4

Fitting the seal rings (For change-over valves)

- 1. Carefully grease the seal with Klüber Paraliq GTE 703 (USDA H1) Do NOT grease on back of seal!
- 2. Fit the seal on the inner guide ring (9). Remember to mount the flat side of seal upwards as shown on figure. 3. Fit support part (10)
- 4. Lubricate the ends of the support part (10) and the outer guide ring (8) with Klüber Paralig GTE 703 (USDA H1) and assemble the tool.
- 5. In a hydraulic press, the outer guide ring (8) is pressed downwards so that the seal is fitted in the groove of the valve plug. IMPORTANT! The outer guide ring (8) must be closed guickly until metal contact with the support part (10). Normally, the inner guide ring (9) is moved upwards during closing; otherwise lift the pin (2) while fixture is still closed
- 6. If the seal is not fitted correctly in the groove this can be fixed with a screwdriver.
- 7. Always remember to release air behind the seal after fitting.

Lower valve plug:

(Change-over valve)



C = No grease

D = **NOTE!** Flat side up!

A = Lubricate ends

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.

6.1 Technical data

SMP-BCA is operated by means of compressed air. The valve is a normally closed (NC) valve.

Sterile stem sealing towards the atmosphere is ensured by a special designed PTFE/rubber diaphragm unit. The PTFE diaphragm does not allow product residues to build up on the product contact surface.

The product lines are separated by two sealings and a sterile barrier chamber to avoid mixing of product and to ensure immediate indication in case of a leak from one of the plug seals. Two small pneumatic normally open (NO) valves control flow to and from the sterile barrier chamber.

Technical data		
Pressure range	0 - 800 kPa (0-8 bar)	
Temperature range	-10°C to 140°C (EPDM)	
Optimum process conditions	>50 kPa (0,5 bar), > 20°C	
Max. sterilisation temperature (steam - short time)	150°C – 380kPa (3,8 bar)	
Air pressure	500 – 800 kPa (5-8 bar)	
Air consumption (litres free air)		
38mm, 51mm, DN40, DN50	0.2 x air pressure in bar	
63.5mm, 76mm, 101.6mm, DN65, DN 80, DN100	0.7 x air pressure in bar	
NOTE! Vacuum is not recommended in aseptic applications.		
Expected lifetime of diaphragm unit under normal condition (no pressure shocks or cavitation)	IS:	
Size/type	Stop valve activations	Change-over valve activations
38mm/DN40	12,000	10,000
51mm/DN510	12,000	10,000
63.5mm/DN65	12,000	5,000
76.1mm/DN80	5,000	5,000
101mm/DN100	5,000	5,000
NOTE! Activating the valve without internal product pressure re	educes life time of diaphragm un	t.
Materials		
Product wetted steel parts	Acid resistant steel AISI 316L	
Other steel parts	Stainless steel AISI 304	
Finish	Semi bright	
Product wetted seals	EPDM, PTFE	
Other seals	NBR, EPDM	

Noise

One meter away from - and 1.6 meter above the exhaust the noise level of a valve actuator will be approximately 77db(A) without noise damper and approximately 72 db(A) with damper - measured at 7 bars air-pressure.

6 Technical data

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.

Weight (kg)

Size	38 mm	51 mm	63.5 mm	76.1 mm	101.6 mm	40 DN	50 DN	65 DN	80 DN	100 DN
Weight - Stop valve	6.5	6.8	13.3	14.9	18.2	6.5	6.8	13.3	15.6	18.2
Weight - Divert valve	8.2	8.6	15.5	18.6	24.6	8.2	8.6	15.5	19.6	24.6

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.



(76-101.6mm/DN80-100)



7 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.



Stop valve

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.



Change-over valve

7 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.

7.1 Stop valve



It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.

Parts list							
Pos.	Qty	Denomination					
1 2 🗆	1 2	Actuator complete Cap O-ring					
3 4 5	2 1 1	Plug Cylinder Spring assembly					
6	1 1 1	Lock wire O-ring Piston					
9	1 1 1	Clip, complete O-ring Bonnet					
12 13 14 🗆	1 1 1	Drain tube Air fitting, swivel bend O-ring bonnet					
15	1	Guide ring O-ring stem					
17 ◆ 18 19	1 1 2	Seal ring Intermediate piece Clamp and screws					
20 21	1 1 1	Washer Washer (period 9605-9909) Stem upper					
22 • 22a	1 1 1	Diaphragm set Diaphragm support, EPDM. Diaphragm PTEE					
220 22c 22d	1 1 1	L-seal Stem seal					
23 24 24a	1 1	Plug complete Plug					
24b ♦ 24c ♦ 25	1 1 1	Seal ring Seal ring Valve body					
26 o 26a ♦o 26b o	2	Internal parts O-ring, NBR Spring					
26c ♦0 26d 0	2	O-ring Spindle					
26e ♦0 26f 0 26g	2 2 2	O-ring, HNBR Plug Air fitting, swivel bend					

7 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.

Service kits

	Denomination	38 mm DN40	51 mm DN50	63.5 mm DN65	76.1 mm DN80	101.6 mm DN100
Sonio	a Kit for Actuator					
Servic	e Nit for Actuator					
	Service Kit	9611920362	9611920362	9611920363	9611920364	9611920364
Servic	e Kit for Product wetted parts					
•	Service kit, EPDM	9611920371	9611920371	9611920373	9611920374	9611920375
•	Service kit, NBR	9611920376	9611920376	9611920378	9611920379	9611920380
•	Service kit, FPM	9611920381	9611920381	9611920383	9611920384	9611920385
Servic	e Kit for Detecting/CIP valve complete					
0	Service kit, EPDM	9611920354	9611920354	9611920354	9611920354	9611920354
0	Service kit, NBR	9611920270	9611920270	9611920270	9611920270	9611920270
0	Service kit, FPM	9611920271	9611920271	9611920271	9611920271	9611920271
Parts r	narked with □•0 are included in the service kits.					
Recon	nmended Spare Parts: Service Kits.					

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7 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.

7.2 Change-over valve



It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.

Parts list						
Pos.	Qty	Denomination				
1 2 □ 3	1 2 2	Actuator complete Cap O-ring Plug				
4	1	Cylinder				
5 6	1	Lock wire				
7 D 8	1	O-ring Piston				
9 🗆 10 🗆	1	Clip, complete O-ring				
11 12	1 1	Bonnet Drain tube				
13 14 ロ	1	Air fitting, swivel bend O-ring bonnet				
15 🗆 16 🗖	1	Guide ring				
17 ♦	3	Seal ring				
18 19	1 4	Intermediate piece Clamp and screws				
21 22 ◆	1	Stem upper Diaphragm set				
22a 22b	1	Diaphragm support, EPDM Diaphragm, PTFE				
22c 22d	1	L-seal Stem seal				
23 24	1	Diaphragm ring Plug upper complete				
24a	1	Plug upper				
24b ♦ 24c ♦	1	Seal ring Seal ring				
25 26 o	1	Valve body Internal parts				
26a ♦0	2	O-ring, NBR				
26c ♦0	2	O-ring				
26d o 26e ♦o	2 2	Spindle O-ring HNBR				
26f o 26g	2 2	Plug Air fitting, swivel bend				
27 28 ♦	1 2	Valve body O-ring				
29	1	Stem lower				
30 202 •	1	Plug lower complete				
30b 31	1	Plug lower Valve body				

7 Parts list and service kits

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.

Service kits

	Denomination	38 mm DN40	51 mm DN50	63.5 mm DN65	76 mm DN80	101.6 mm DN100
Service	Kit for Actuator					
	Service Kit	9611920362	9611920362	9611920363	9611920364	9611920364
Service	Kit for Product wetted parts					
•	Service kit, EPDM	9611920386	9611920386	9611920387	9611920388	9611920389
•	Service kit, NBR	9611920390	9611920390	9611920391	9611920392	9611920393
•	Service kit, FPM	9611920394	9611920394	9611920395	9611920396	9611920397

Parts marked with $\square \bullet o$ are included in the service kits. Recommended Spare Parts: Service Kits.

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Parts list and service kits 7

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.

7.3 Tool for plug seals

Tool for shut-off valve and change-over valve (upper plug)





Large seal ring

* Only for 38-51 mm/DN40-50 upper change-over plug (markingC8)



Tool for change-over valve (lower plug)

Lower valve plug

It is important to observe the technical data during installation, operation and maintenance. Inform the personnel about the technical data.

Parts list							
Pos.	Qty	Denomination					
1	1	Outer guide ring for large seal					
2	1	Pin for tool					
3	1	Inner guide ring for large seal					
4	1	Tool housing, upper plug					
5	1	Outer guide ring for small seal					
6	1	Inner guide ring for small seal					
7	1	Support part, upper plug					
8	1	Outer guide ring, lower plug					
9	1	Inner guide ring, lower plug					
10	1	Support part, lower plug					
11	1	Tool housing, lower plug					
12	1	Tool housing, ch/o upper plug					

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